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SCIENCE

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DOES A TECHNICAL COURSE EDUCATE?*

BEFORE we can answer the question 'Does a Technical Course Educate?' it is necessary that we understand what education should mean. We do not need to trace this word back to its root, to find its derivation in some ancient language and to learn its exact meaning in that tongue, but rather to find what it has stood for in the thoughts of men, what processes have been necessary to produce it and what its value has been to those possessing it. If we take a brief look at some of the methods and ideals of education in the past we may receive light upon its proper meaning to-day. Education is for the benefit of the individual or for the benefit of the state. In Persia, in Egypt, in Greece, in Rome, the individual was nothing, the state was everything. The hopes, the desires, the wishes of men were not considered; the growth and prosperity of the state were paramount. In Persia and Sparta education was for war. The education of the body was for the many; the education of the mind for the few. Aristotle was the first to teach that the ultimate end of education is the ability to enjoy the blessings of peace.

Society derives its ideals of education at any epoch from the limits of knowledge at that epoch. A man can teach only what he knows. If he knows but little he can teach but little; if the sum of human knowledge is small, there is but little to be taught, although there is much to learn. In the early days of Greece the Trivium and the Quadrivium embraced all knowl-

* Inaugural address of the president of Case School of Applied Science, May 11, 1904.

which in thoroughness, lucidity, in masterly treatment throughout, is rivaled by but few, excelled by none. F. G. WIECHMANN.

SCIENTIFIC JOURNALS AND ARTICLES.

THE *Botanical Gazette* for June contains the following articles: Dr. Roland Thaxter publishes a further contribution on the Myxobacteriaceæ, especially in reference to the work of Migula, Zukal, Miss A. L. Smith and Zederbauer; also establishing eight new species. John Donnell Smith contributes his twenty-sixth fascicle of 'Undescribed Plants from Guatemala and Other Central American States,' describing twelve new species. Thomas H. Kearney asks the question, 'Are Plants of Sea Beaches and Dunes True Halophytes?' reaching the conclusion that these are not generally halophytic. Alice Eastwood publishes fourteen new species of western Polemoniaceæ. George J. Peirce, in 'Notes on the Monterey Pine,' shows that the difference in the quantities of water and solutes drawn up through the xylem into galled and normal leaves furnishes the reason for the differences in the amount of conducting tissue as shown by the annual rings. In other words, amputated seedlings and branches bearing galled leaves develop bundles which vary from the normal according to the degree of injury which the leaves have undergone. This is confirmation of Jost's conclusion that leaves and vascular bundles are closely correlated in their development. Amon B. Plowman publishes the 'Celloidin Method for Hard Tissues' as developed and perfected by Professor E. C. Jeffrey. M. A. Chrysler publishes 'Anatomical Notes on Certain Strand Plants,' being the results of a comparative study of the leaf anatomy of certain plants in the vicinity of Woods Hole and near Lake Michigan. Charles E. Allen makes a preliminary announcement of his conclusions in reference to chromosome reduction in *Lilium canadense*, being quite different in some points from those previously maintained.

THE June issue of the *Bulletin of the Michigan Ornithological Club* contains the follow-

ing articles: 'Some Notes on the Life History of the American Redstart,' by J. Claire Wood, with a full-page cut of the species by Louis Agassiz Fuertes. Bradshaw H. Swales concludes his 'List of the Land Birds of Southeastern Michigan.' A. H. Griffith contributes 'Birds in Decoration,' which is illustrated by specimens of Japanese art from the Detroit Museum of Art. P. A. Taverner writes on the 'Tagging of Birds' as a means of solving some of the vexing problems of migration. Walter B. Barrows describes the ornithological and oological collections of the Michigan Agricultural College, which is supplemented by a half-tone of the interior. Alexander W. Blain, Jr. notes the capture of 'Three Rare Michigan Birds.' There are other notes of value and the usual reviews. With this issue Professor Barrows becomes one of the editorial staff.

SOCIETIES AND ACADEMIES.

THE RESEARCH CLUB OF THE UNIVERSITY OF MICHIGAN.

At the meeting of the club held April 27 Dr. Novy presented the results obtained in collaboration with Mr. McNeal on the cultivation of the organisms causing trypanosomatic diseases. These investigators have been able to cultivate three of these protozoa. The organism *Trypanosoma lewisi* has now been under cultivation for two years. *T. brucei*, the cause of nagana or the tsetse-fly disease of South Africa, has been under cultivation since last August. The culture medium sent from Manila, after inoculation with the trypanosome from a cow suffering with surra, on arrival in Ann Arbor, showed an excellent culture of this organism which had developed en route. This organism was kept alive for sixty-five days, but all efforts to secure infection in animals or to obtain subcultures failed.

A comparison of the trypanosome from the Philippine surra with that from the Island of Mauritius seems to indicate that the two are entirely distinct.

The cultural characteristics of the Philippine trypanosome are such as to distinguish